

CHAPTER 3

DIET THERAPY

This chapter is concerned with the nutritional requirements for the healthy and for the sick, wounded, and convalescing patient. Research has proved that good health in part depends upon the availability of essential elements that the body needs throughout life. The well-nourished individual is usually mentally alert, is at a maximum of physical capability, and has a high resistance to disease. The daily basic minimum nutritional requirements must also be met and often times supplemented during periods of illness to meet changing needs of the body and its ability to use foods. Therefore, the diet is an important factor of the therapeutic plan for each patient.

FOOD CLASSIFICATION

Foods are substances from the animal, plant, and mineral kingdoms that, when taken into the body, yield heat and energy, build and renew tissues, and regulate the body processes. Nutrients are classified as proteins, fats, carbohydrates, minerals, vitamins, and water.

PROTEINS

Proteins are important nutritive elements required by man. They are found in both the animal and plant kingdoms. All proteins are composed of amino acids, some of which are absolutely essential to maintain life and are necessary for repair, growth, and body development. Proteins, which promote tissue growth and renewal, have long been recognized as the main structural unit of all living cells. Each gram (g) of protein yields 4 calories in the process of metabolism, (If sufficient carbohydrate is not supplied, the body will use protein for energy requirements. This protein may be obtained from muscle tissue to produce a "wasting effect" in some diseases or long term starvation.) Although proteins also yield energy, they are an expensive source. A

constant protein source is required in the daily diet. The normal daily protein intake for adults should be .08 gram per kilogram (g/kg) (2.2 lbs) of body weight, or 12 percent of the total caloric intake, as indicated in the 1980 revision of the *Recommended Daily Allowances*, prepared by the Food and Nutrition Board, National Academy of Sciences, National Research Council. Pregnant women require 1.2 g of protein per kg of body weight.

Proteins play an important role in recovering from injuries of all kinds, such as fractures, burns, and infections. They are also important in healing wounds and recovering from surgical procedures. Protein intake should be increased in accordance with the severity of the above conditions. Calories must be sufficiently high in order to spare protein for tissue repair. Carbohydrates and fats can be added liberally. Ideally, the patient should receive protein by mouth; however, it is sometimes necessary to meet the minimum requirements through the parenteral route. Glucose parenteral solution, given during the acute emergency period, will prevent some loss of protein. Protein deficiency may stunt growth, promote a secondary anemia, or induce nutritional edema. Dietary sources of protein are milk, yogurt, eggs, meats, fish, cheese, poultry, peanut butter, legumes, and nuts. (Protein from plant sources is best used combined with animal protein, such as milk plus peanut butter, or if legumes are combined with grains, such as Navy beans plus rice.)

FATS

The chief functions of fats are to supply energy and transport fat-soluble vitamins. Each g of fat yields 9 calories. Fats provide the most concentrated source of calories (thus energy) of all the food nutrients. They are found in both the animal and vegetable kingdoms. Fatty acids and glycerol are the end products of the digestion of fats. In the normal diet, fats should

contribute 30 percent of the calories. Saturated fat intake should be no more than 10 percent of the total calories. Cholesterol may be limited to 300 milligrams (mg) per day.

Many fats act as carriers for the fat-soluble vitamins A, D, E, and K; they also act both as a padding for vital organs, particularly the kidneys, and as subcutaneous tissue to help conserve body heat. Fat is stored as adipose (fatty) tissue to form a reserve supply in time of need. Fats delay gastric emptying and promote satiety. Excess calories from fat may produce obesity, the forerunner of arteriosclerosis, hypertension, gallbladder disease, and diabetes. Too little fat in the diet may lead to being underweight, having insufficient padding for the vital organs, and lowered energy. Dietary sources of fats are butter, margarine, cream cheese, fatty meats, whole milk, olives, avocados, egg yolks, nuts, and vegetable oils.

CARBOHYDRATES

Carbohydrates (sugar and starches) are the most efficient sources of energy and are known as the “fuel of life.” They are abundant in food. The Senate Select Committee on Nutrition and Human Needs, *1977 Dietary Goals for the United States, Second Edition*, recommends that complex carbohydrates and naturally occurring sugars make up 48 percent of total caloric intake, and refined and processed sugars 10 percent.

Each g of carbohydrate yields 4 calories in the process of its metabolism. Carbohydrates must be reduced to glucose before they can be used by the body. Carbohydrates are stored in the liver as glycogen. The glycogen is broken down and released as glucose at the exact rate needed by the body. This mechanism is controlled largely by insulin from the pancreas. During fasting glycogen is rapidly depleted, which leads the body to use its fat for energy.

The main functions of carbohydrates are to (1) furnish the main source of energy for muscular work and nutritive processes, (2) help maintain body temperature, (3) form reserve fuel, (4) assist in oxidation of fats, and (5) spare protein for growth and repair. Excess carbohydrates are converted into adipose tissue. Dietary sources of carbohydrates are fruits, honey, sweets, legumes, potatoes, grains, sugars, and grain products.

MINERALS

Although the mineral elements constitute only a small portion of the total body weight, they enter into the activities of the body to a much greater degree than their mere weight would indicate. Table 3-1 lists the essential elements, the foods that contain them, and their functions. Certain mineral elements are essential for specific body functions. It is not known exactly how many of the mineral elements are indispensable to the body functions, but changes of concentration that may seem small can be fatal. These essential inorganic elements contribute overwhelmingly to the skeletal framework of the body and the teeth and are an essential part of many organic compounds. They form an integral part of all cell structure and circulate in body fluids. In addition, they exercise specific physiological influences on the function of body tissues. For the mineral needs to be met satisfactorily, the consumption of each element must be sufficient to cover body tissue requirements and to meet changing physiological needs. It was once believed that any diet that was adequate in other respects would also provide an adequate intake of the essential minerals. This is not true. Foods vary greatly in their mineral content. Depending on growing conditions and storing and preparation procedures, they may vary considerably in nutritional content.

VITAMINS

Vitamins are essential substances present in food in minute quantities. Although they do not furnish energy or act as tissue building materials, they do act as catalysts in many body chemical reactions and are necessary for normal metabolic functions, growth, and health of the human body. Their absence results in malnutrition and specific deficiency diseases. Their chemistry is complex and nutritional experimentation is difficult, so our knowledge of them is being continually supplemented and revised. It is quite possible that additional vitamins will be discovered or that some of those already recognized may prove to contain more than one factor.

Vitamins are so widely distributed in food that a properly prepared normal diet usually provides an adequate amount. Some are destroyed in preparing or preserving certain foods. Some manufacturers add vitamins to their products to replace those destroyed or removed in processing. Fat-soluble vitamins A, D, E, and K can be stored in the body. It is possible to consume excessive

Table 3-1.—Table of Mineral Elements in Nutrition

Element	Rich Sources	Function in the Body
IODINE	Seafood, water, and plant life in nongoiterous region, sodium iodine in iodized salt	Assists in normal functioning of the thyroid gland
SODIUM	Table salt, seafood, animal products and foods processed with sodium	Regulates osmotic pressure, pH balance and heartbeat
POTASSIUM	Avocados, bananas, oranges, potatoes, tomatoes, nuts, meat, coffee, tea, milk, and molasses	Regulates osmotic pressure and pH balance (a constituent of all cells)
MAGNESIUM	Nuts, whole grain cereals, legumes, and vegetables	Assists in maintaining mineral balance
CALCIUM	Milk, yogurt, cheese, some green vegetables, molasses, sardines, and salmon	Assists in blood coagulation. Regulates the heartbeat, aids in regulating mineral metabolism and muscle and nerve response (a constituent of bones and teeth)
PHOSPHORUS	Milk, yogurt, poultry, fish, meats, cheese, nuts, cereals, and legumes	Aids in metabolizing organic foodstuffs and maintains pH balance (a constituent of bones and teeth)
IRON	Liver, egg yolks, meat, oysters, legumes, whole or fortified grains, dark green vegetables, and dried fruit	Helps carry oxygen throughout the body (a constituent of hemoglobin, blood, and tissue)
CHLORINE	Table salt, seafoods, and animal products	Regulates osmotic pressure (a constituent of gastric acid)
SULPHUR	Protein foods	Promotes hair and nail formation and growth (a constituent of all body tissue)
COPPER	Liver, kidney, nuts, dried legumes, some shellfish, and raisins	Aids in the use of iron in hemoglobin synthesis
ZINC	Meat, liver, eggs, seafood (especially oysters), milk, and whole grain products	Regulates growth, taste acuity, and appetite (a constituent of enzymes)

amounts of these nutrients and cause hyper-
vitaminosis; death may result in extreme cases.
Water-soluble vitamins, such as B complex and
ascorbic acid, are not stored to any great extent.

Vitamin supplements are usually not necessary
if the diet includes a wide variety of foods.
Exceptions may occur in prenatal diets in which
iron is low and in patients proven to be deficient
in a specific vitamin. Vitamin supplements should
be taken only on a physician's or dietitian's
recommendation.

WATER

The body can survive weeks without food, but
only days without water. It makes up 70 percent
of the body weight and is found in every cell in
the body. Water is the medium through which
nutrients are transported from the digestive tract
to the cells where they are needed. It is also the
medium through which the by-products of cell
metabolism are removed. Water also serves as the
medium in which the chemical processes of life
take place. Fluid needs are increased with
sweating, vomiting, diarrhea, high protein diets,
and hot environments. Water is normally taken
into the body in beverages, soups, and in the form
of solid foods. An insufficient intake may cause
constipation, loss of weight, abnormal body
temperature, and dehydration leading to ketosis.

GUIDE TO GOOD EATING

Calculating therapeutic diets can be com-
plicated and is best left to dietitians. For daily
living, there is a simple, practical plan, based upon
the classification of foods into groups according
to the nutrient content.

It is now common practice for dietitians or
dietary kitchens to select foods for diets on the
basis of food groups. See figure 3-1 for the Guide
to Good Eating food groups. They are classified
according to their nutritional value and the
number of servings that should be eaten each
day. This figure can serve as a simple
and effective guide in planning or evaluating
diets.

DIETS

The appetite of the patient requires catering
to, as patients tend to be more fastidious when
sick. In some disease states, such as cancer,

patients experience marked taste changes. Because
of the importance of the nutritional elements in
feeding the sick, try to carry out the patient's
wishes whenever possible. A tactful and observant
hospital corpsman will be most helpful to the
physician and dietitian in carrying out the dietary
regimen. You must be aware of what comprises
a well-balanced diet and should be able to
recognize when dietary adjustments need to be
made in special situations. This is important to
meet the changing needs of the diseased body's
ability to make use of foods.

The patient should be made to feel that the
utmost cleanliness and care have been observed.
The patient's face and hands should be cleaned
before food is served, and the lips and teeth
cleaned before and after the meal. If the mouth
is dry, it should be moistened periodically.

When special or modified diets are ordered,
check the contents of the tray with the written
orders. An error in serving a special diet
may cause discomfort, serious illness, or even
death.

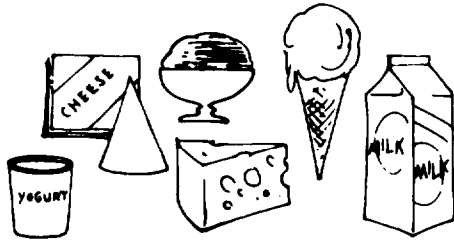
OBJECTIVES OF DIET THERAPY

The dietary objectives are:

- To increase or decrease body weight
- To rest a particular organ; e.g. to limit
cholecystagogues in preventing gallbladder con-
traction
- To adjust the diet to the body's ability to
use certain foods
- To produce some specific effect as
a remedy; e.g. to regulate blood sugar in dia-
betes
- To overcome deficiencies by the addition
of food rich in some necessary element; e.g. to
supplement the diet with iron in treating
macrocytic anemia
- To provide ease of digestion by omitting
irritating substances, such as fiber, condiments,
or fried foods

Diets used in the treatment of disease are often
spoken of by names that show a special composi-
tion and often indicate the purpose for which the
diet is intended.

A GUIDE TO GOOD EATING

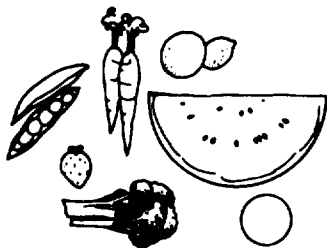
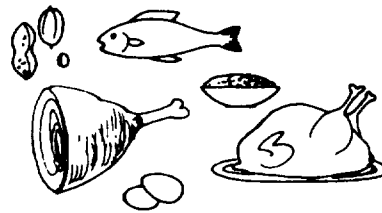


MILK GROUP

FOODS MADE FROM MILK CONTRIBUTE PART OF THE NUTRIENTS SUPPLIED BY A SERVING OF MILK. ADULTS 2 OR MORE SERVINGS.

MEAT GROUP

DRY BEANS AND PEAS, SOY EXTENDERS, AND NUTS COMBINED WITH ANIMAL PROTEIN (MILK, MEAT, FISH, POULTRY, EGGS, CHEESE) OR GRAIN PROTEIN CAN BE SUBSTITUTED FOR A SERVING OF MEAT. ADULTS 2 OR MORE SERVINGS.

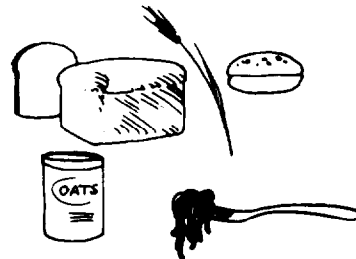


VEGETABLE AND FRUIT GROUP

DARK GREEN, LEAFY, OR ORANGE VEGETABLES AND FRUIT ARE RECOMMENDED 3 OR 4 TIMES WEEKLY FOR VITAMIN A. CITRUS FRUIT IS RECOMMENDED DAILY FOR VITAMIN C.

GRAIN GROUP

WHOLE GRAIN, FORTIFIED, OR ENRICHED GRAIN PRODUCTS ARE RECOMMENDED. ADULTS 4 OR MORE SERVINGS.



OTHERS GROUP

OILS, FATS, SWEETS, CONDIMENTS. FOODS IN THIS GROUP COMPLEMENT BUT DO NOT REPLACE FOODS IN THE OTHER GROUPS. AMOUNTS SHOULD BE DETERMINED BY INDIVIDUAL CALORIC NEEDS AND DISEASE STATES.

Figure 3-1.—A Guide to Good Eating.

REGULAR DIET

The regular diet composed of all types of foods, is well balanced and capable of maintaining a state of good nutrition. It is intended for convalescing patients who do not require a therapeutic diet.

MODIFIED OR THERAPEUTIC DIETS

These diets are modifications of the regular diet designed to meet specific patient needs. These include:

- Method of preparation (boiling or broiling)
- Consistency (ground or chopped)
- Total calories (high or low calorie diets)
- Nutrients (altering carbohydrate, protein, fat, vitamins, minerals)
- Allowing only specific foods (diabetic diet)

Soft

This diet is soft in texture and consists of liquids and semisolid foods. It is indicated in certain postoperative cases, for convalescents who cannot tolerate a regular diet, in acute illnesses, and in some gastrointestinal disorders. It is an intermediate step between the liquid and regular diets. It is low in connective tissue and indigestible dietary fiber. Little or no condiments are used in its preparation.

Soft diets include all liquids in addition to well-cooked cereals, pastas, white bread and crackers, eggs, cottage cheese, tender meat, fish, poultry, and vegetables, including baked, mashed, or scalloped potatoes. Foods not allowed include fried foods, raw vegetables, and nuts. Desserts permitted are custards, gelatin puddings, soft fruits, and simple cakes and cookies. Vegetables can be pureed and meats ground for dental patients.

Liquid

This diet consists of foods that are in a liquid state at body temperature. It is indicated in some postoperative cases, in acute illnesses, and in inflammatory conditions of the gastrointestinal (GI) tract. It is important that feedings consisting of 6 to 8 ounces or more be given every 2 to 3 hours while the patient is awake. These diets are usually ordered as clear, full, or dental liquid. A clear liquid diet includes clear broths, black tea or coffee, plain gelatin, and clear fruit

juices (apple, grape, and cranberry), popsicles, fruit drinks, and soft drinks. This diet is inadequate in all nutrients. A full liquid diet includes all the liquids served in a clear liquid diet, with the addition of strained soups and broths, milk and milk drinks, ice cream, sherbet, puddings, and custard. The all liquid diet is inadequate in iron, niacin, and possibly Vitamin A and thiamin. A dental liquid diet includes foods slenderized and strained in liquid form and all foods allowed on clear and full liquid diets. Vitamin and mineral supplements may be necessary with the dental liquid diet if the recommended amounts of food are not tolerated.

High Calorie

This diet is of a higher caloric value than the average patient normally requires. An increase in total calories is needed by patients who are malnourished, underweight, postsurgical, or convalescing from acute illnesses such as infections, burns, and fevers. The increase in calories is obtained by supplementing or modifying the regular diet with high calorie foods or commercial supplements, giving larger portions, or adding snacks. It is given to meet a need for energy caused by the more rapid metabolism that accompanies certain diseases, especially fever, hyperthyroidism, poliomyelitis, and tuberculosis. In the liquid or soft diet, the caloric value is increased by adding fats and carbohydrates. Proteins are added to prevent depletion of proteins in the plasma (hypoproteinemia). As the patient progresses, a more solid diet is given.

Good sources of high calorie foods are whole milk, cream, sweets, butter, margarine, fried foods, gravies, sauces, and ice cream. Between-meal feedings consisting of milk, milkshakes, cheese, cookies, or sandwiches are recommended, but they should not interfere with the patient's appetite at mealtime.

High Protein

As previously stated, protein is essential for tissue growth and regeneration. The high protein diet is indicated in almost all illnesses; for example, nephrosis, cirrhosis of the liver, infectious hepatitis, burns, radiation injury, fractures, some GI disorders, other conditions in which the protein blood level is low, and in preoperative and postoperative cases.

In some acute illnesses and disorders, such as infectious hepatitis, GI disorders, and postoperative conditions, patients may be unable

to consume solid foods or the daily requirement of protein because of pain or nausea. Therefore, substitute intravenous fluids and nutrients in order for the patient to receive the required amount of protein.

Protein-calorie deficiency is a definite factor in postoperative wound disruption. This disruption can best be prevented by preemptive nutritional measures before surgery. Antibody production will be decreased if the patient receives inadequate protein.

The daily recommended intake of proteins for adult patients is at least .8 g/kg of body weight (approximately 56 g). A high protein diet should provide a minimum of 1.5 g of protein per kg of body weight (approximately 105 g). The seriously burned and radiation injury patients should receive at least 187.5 g daily.

Supplement the regular diet with high quality protein foods, such as meat, fish, fowl, cheese, milk, and eggs, as listed in table 3-2.

Table 3-2. Sample High Calorie—High Protein Diet

BREAKFAST	
Fruit	1 fresh or 1/2 cup canned or stewed
Cereal	1/2 cup whole wheat, cooked
Eggs or low cholesterol egg substitute	2 or more daily
Bread or toast	2 slices enriched or whole wheat
Butter or margarine	2 pats or 2 tsp*
Jam or jelly	1 tbsp
Whole milk	1 cup
Coffee	With sugar/cream
MIDMORNING	
Milk, milk products, or sweetened fruit juice	1 cup
LUNCH	
Soup	3/4 cup thick or cream
Lean meat	4 oz (Cheese, fish, or fowl may be substituted.)
Potato	1/2 cup
Vegetables	1/2 cup
Salad	1/2 cup
Salad dressing	1 tbsp
Bread	2 slices enriched or whole wheat
Butter or margarine	2 pats
Fruit	1 fresh or 1/2 cup canned or stewed
Whole milk	1 cup
*1 pat (butter or margarine) = tsp	

Table 3-2.-Sample High Calorie-High Protein Diet-Continued

MIDAFTERNOON	
Milk, milk products, or sweetened fruit juice	1 cup
SUPPER	
Soup	3/4 cup thick or cream
Lean meat	4 oz (Cheese, fish, or fowl may be substituted.)
Potato.....	1/2 cup
Vegetables	1/2 cup
Salad.....	1/2 cup
Salad dressing	1 tbsp
Bread	2 slices enriched or whole wheat
Butter or margarine	4 pats
Fruit	1 fresh or 1/2 cup canned or stewed
Dessert	1/2 cup pudding, custard, or ice cream
Whole milk	1 cup
BEDTIME	
Milk, milk products, or sweetened fruit juice	1 cup

Low Calorie

Low calorie diets are used in the treatment of obesity, but they may also be used to control weight in medical conditions such as arthritis, hypertension, diabetes, cardiac disease, or hypothyroidism. A loss of 1 to 2 pounds a week is a medically acceptable reduction in weight. Low calorie diets consist of 800 to 1800 calories per day. A sample 1200 calorie diet is shown in table 3-3. Calorie levels are determined by physicians and dietitians to help meet specific individual patient weight loss goals. The daily intake of proteins should be at least .8 g/kg of standard body weight. Supplemental vitamins may be ordered if the prescribed diet is less than 1200 calories.

Patients on low calorie diets should be instructed by the dietitian (if available) or other

medical personnel knowledgeable in proper eating habits. The dietitian conducts patient interviews to learn the patient's eating behavior, usual portions, preparation of foods, meal patterns, nutritional adequacy, exercise, and so forth. Individual programs should then be recommended to assist patients to attain and maintain their ideal weight.

The *Handbook of Clinical Dietetics* published by the American Dietetic Association, lists the formula for determining ideal body weight as follows. For females, the basic weight for 5 feet is 100 pounds. Add 5 pounds for every inch over 5 feet. For males, the basic weight for 5 feet is 106 pounds, with 6 pounds added for every inch over 5 feet. Adjustments must be made for body build. Reduce desired weight by 10 percent for a small frame; increase it by 10 percent for a large frame. Total caloric requirements are based on ideal body weight plus activity.

Table 3-3.-Sample 1200 Calorie Diet

BREAKFAST

Fruit	1 small fresh or 1/2 cup unsweetened canned
Egg	1 daily. Do not prepare in butter, margarine, or oil (1 oz lean meat may be substituted)
Bread or cereal	1 slice or 3/4 cup dry cereal
Butter or margarine	2 pats
Milk	1 cup skimmed or buttermilk
Coffee or tea	Without sugar or cream

LUNCH

Soup	1 cup clear broth or strained clear soup
Lean meat	3 oz (Low fat cheese or baked fish or fowl may be substituted)
Vegetables	1/2 cup
Salad	1/2 cup
Salad dressing	1 tbsp low cal
Bread	2 slices
Butter or margarine	3 pats
Coffee or tea	Without sugar or cream

SUPPER

Soup	1 cup clear broth or strained clear soup
Lean meat	3 oz (Low fat cheese or baked fish or fowl may be substituted)
Potato, bread, or rice	1 medium, 1 slice, or 1/2 cup cooked
Vegetables	1/2 cup
Lettuce salad	Unlimited
Salad dressing	1 tbsp low cal
Butter or margarine	1 pat
Fruit	1 small fresh or 1/2 cup unsweetened canned
Milk	1 cup skimmed or buttermilk
Coffee or tea	Without sugar or cream

Limit cooking fats, alcoholic beverages, fatty meats, rich and sweet desserts, nuts, cream, sugar, butter or margarine (other than allowed amounts), thick soups, fried foods, and oily salad dressings.

Many patients on low calorie diets experience hunger. To satisfy this hunger or appetite, low calorie foods such as raw vegetables, dill pickles, broth, black coffee or tea, and other unsweetened or diet beverages should be provided. Water and salt need not be restricted unless there are cardiac complications or edema and the restrictions are ordered by the physician.

Low Protein

As the name implies, this diet is made up of foods that furnish only small amounts of protein and consists largely of carbohydrates and fats. Calories should be high to spare protein. Use foods such as marshmallows, hard candy, and

butter liberally. This diet is used in renal diseases associated with nitrogen retention or GI disorders when putrefaction is present. Limited amounts of protein are sometimes advocated in certain kidney diseases, such as chronic nephrotic edema. Low protein diets for renal failure are usually restricted in sodium and potassium, as they are not excreted properly. In some cases of chronic renal insufficiency, the protein content of the diet is varied, usually between 40 and 60 g per day, so that there will be sufficient complete protein to maintain nitrogen equilibrium.

In some metabolic disturbances, such as amino acids in the urine, protein restriction may be of therapeutic value. A sample low protein diet is listed in table 3-4.

Table 3-4.-Sample Low Protein Diet

BREAKFAST	
Fruit or juice	1 citrus fruit or 1/2 cup other fruit juice (recommended once daily)
Cereal	1 cup whole wheat, cooked
Egg	1 daily
Toast	1 slice
Butter or margarine	1 pat or more
Jelly or jam	As desired
Coffee	As desired
Cream	As desired
LUNCH	
Soup	1 bowl, clear
Meat	2 oz
Potato	1 medium, baked
Salad	1/2 cup
Fruit	1 grapefruit or orange
Bread	1 slice
Jelly or jam	As desired
Butter or margarine	1 pat
Coffee	As desired
Hard candy	As desired

Table 3-4. Sample Low Protein Diet-Continued

SUPPER	
Soup	1 bowl, clear
Cottage cheese	2 oz
Vegetables	1/2 cup
Salad	1/2 cup
Bread	1 slice
Jelly or jam	As desired
Butter or margarine	1 pat
Marshmallows	As desired
Fruit	1 small piece
Milk	1 cup
<p>Avoid meat and milk (other than allowed amounts), peas, beans, nuts, cheese, and desserts or soups containing milk or eggs.</p>	

High Residue

The high residue (high bulk, high fiber, high roughage) diet is indicated in atonic constipation, spastic colon, irritable bowel syndrome, and diverticulosis. This diet encourages regular elimination by stimulating muscle tone, creating softer and larger stools that are more easily propelled through the colon. This reduces the pain and cramping that accompany spastic colon or irritable bowel syndrome.

The patient is given a regular diet, with the inclusion of high residue foods. The main sources of fiber are whole grain breads and cereals, bran cereals, fresh fruits, and vegetables that are raw or cooked until tender. Whole grain breads and cereals that contain wheat bran have a greater laxative effect than fruits and vegetables, because the bran acts to absorb water within the colon creating, a bulk effect. At least one serving of 100 percent wheat bran cereal is recommended daily. Raisin Bran, Bran Flakes, Shredded Wheat, and Oatmeal may be used occasionally, but they contain less than half the amount of fiber in All Bran or Bran Buds. Fresh fruits and vegetables with edible skins, such as apples and grapes are higher in fiber content than canned fruits or vegetables and their juices.

Dietary intake of refined sugars and starches should be decreased, as they are poor sources of fiber. Limit white flour products, refined cereals, pies, cakes, and cookies.

Fluids are increased. Too little fluid in the diet may cause dehydration and lead to constipation. The patient must drink at least 8 glasses of water or other fluids daily, particularly when consuming the recommended amount of bran. Drinking too much alcohol, coffee, cola, tea, and soft drinks can irritate a sensitive colon and can cause dehydration. If possible, use decaffeinated coffee. One or 2 glasses of water in the morning helps to stimulate peristalsis.

Excessive intake of alcohol, beverages containing caffeine (coffee, tea, colas), chili powder, dried beans, fruits with seeds and skins, nuts, pepper, popcorn, and strong spices may cause irritability. These foods should be individualized to the patient.

When one is progressing from a low residue diet after an acute infection or diverticulitis, increase fiber in the diet gradually. Start by adding 1 serving of 100 percent bran cereal and 3 servings of whole grain bread to the low residue menu pattern. Gradually increase the amount of raw vegetables and fresh fruits to at least 4 servings per day.

Laxatives may cause decreased absorption of vitamins, loss of minerals, or inhibition of glucose uptake.

A sample high residue diet is contained in table 3-5.

Low Residue

This diet is indicated in ulceration, inflammation, and other gastric disorders, such as partial intestinal obstruction or diverticulitis. It is also used in certain postoperative states that affect any part of the GI tract, e.g., a hemorrhoidectomy. Low residue diets are also used in treating dysenteries of long duration.

The purpose of this diet is to provide nonstimulating and nonirritating, easily digested material that leaves little residue to avoid mechanical irritation of the GI tract. Commercially prepared low residue elemental diet supplements, such as Vivonex by Eaton or Precision Low Residue by Doyle, may be given to provide complete nutrition.

● Foods Allowed

- **Beverages:** Orangeade, grapeade, and lemonade; weak tea and coffee; decaffeinated coffee
- **Bread:** White, enriched
- **Cereals:** Cooked, refined corn, rice, wheat cereals, and grits (no bran)
- **Cheese:** Cottage, cream, and mild cheddar in cooking
- **Desserts:** Rice and tapioca puddings, custards, gelatin, ice cream, plain cake, and cookies. (Count desserts containing milk in the milk allowance.)
- **Eggs:** Soft cooked or poached (1 or 2 daily)

- **Fat:** Butter, margarine, and salad dressing
- **Fruits:** Orange juice, grapefruit juice, and strained apples, peaches, pears, and ripe bananas
- **Meat:** Crisp bacon and tender meat, fish, or fowl that is baked, boiled, or broiled
- **Milk:** Whole or skim, cream, or cocoa (2 cups daily)
- **Soups:** All strained, creamed, and pureed
- **Vegetables:** Strained vegetable juice, lettuce, cooked asparagus, beets, greenbeans, tomatoes, eggplant, acorn squash (without seeds), lima beans, or spinach (2 servings daily)

● Foods to Avoid

- **Beverages:** Alcoholic
- **Bread:** Hot
- **Cereals:** Coarse, whole grain
- **Cheese:** Uncooked
- **Desserts:** Rich
- **Fruits:** Raw or dry
- **Meat:** Fibrous
- **Vegetables:** Gas-forming, such as cabbage, turnips, dry lentils, beans, or onions
- **Other:** Spicy seasonings or fatty, fried, very hot, or very cold foods

Table 3-5.-Sample High-Residue Diet

ON RISING	
Water	1 or 2 glasses
BREAKFAST	
Fresh fruit or fruit juice	1/2 cup
Cereal	1 cup whole grain, Oatmeal with bran
Egg	1 Prepare in any style (1 oz meat may be substituted)
Bread	1 slice whole wheat
Butter or margarine	As desired
Milk	1 cup
Beverage	Decaffeinated coffee, tea, or milk (as desired)
LUNCH	
Soup	1 cup with bran
Meat	4 oz
Potato	1 medium
Vegetables	1/2 cup
Salad	1/2 cup lettuce, celery, or tomatoes
Salad dressing	As desired
Bread	1 slice whole wheat
Butter or margarine	As desired
Dessert	1 serving
Beverage	Decaffeinated coffee or tea (as desired)
SUPPER	
Soup	1 cup with bran
Meat	4 oz
Potato	1/2 cup
Vegetables	1/2 cup
Salad	As desired
Salad dressing	As desired
Fresh apple	1 large
Beverages	Decaffeinated coffee or tea (as desired)
BEDTIME	
Fruit	Prunes, figs, dates, raisins, or pears

A sample low residue diet is contained in table 3-6.

Low Sodium

A low sodium diet consists of foods containing a very small percentage of sodium, with no salt added in preparation or by the patient. It is impossible to prepare an absolutely sodium-free diet.

The low sodium diet is indicated when edema is present, in renal diseases, in hypertension, and in certain cardiac conditions.

The nephrotic patient is often unable to excrete sodium in a normal manner. The kidneys' retention of sodium leads to edema. A low sodium diet is thus indicated, with no restriction on salt-free fluids. Such patients should be encouraged to drink 2,000 to 3,000 milliliters (ml) of low sodium fluids daily.

The allowance of sodium in a strict low sodium diet is 250 to 1000 mg daily. The allowance of sodium in a moderate low sodium diet is 2000 mg or 2 g. Regular diets with no salt added contain 2.4 to 4.5 g of sodium.

Any diet in which the amount of sodium is drastically reduced has possible side effects. The patient who is on this regimen must be constantly observed, particularly in warm climates, for lassitude, complaints of weakness, anorexia, nausea and vomiting, mental confusion, abdominal cramps, and aching skeletal muscles.

● Foods Allowed

- **Beverages:** Milk (2 cups daily), carbonated beverages (1 cup daily), unsalted fruit juices, coffee, and tea
- **Bread:** Made without baking soda, baking powder, or salt. Low sodium baking soda and baking powder are allowed. Regular bread is provided on diets of 2000 mg sodium and above.
- **Cereals:** Cooked without salt. Puffed wheat or rice, and Shredded Wheat
- **Desserts:** Any desserts made without salt, baking soda, or baking powder

- **Fat:** Unsalted butter and margarine, shortening, cream, oil, or low sodium salad dressing

- **Fruits:** Any unsalted canned, cooked, fresh frozen, or raw fruit

- **Meat:** Meat, fish, or fowl prepared without salt or sodium compounds, such as meat tenderizers, steak sauce, and soy sauce

- **Soups:** Low sodium including broth

- **Sweets:** Pure sugar candy and jams and jellies made without sodium benzoate

- **Vegetables:** Salt-free raw, cooked, or canned dietetic

● Foods to Avoid

- **Beverages:** Coffee, cocoa, etc.

- **Cereals:** All instant

- **Desserts:** Those prepared with salt, baking soda, or baking powder

- **Fruits:** Jam, jelly, or dried fruit containing sodium benzoate

- **Meats:** Canned, salted, or smoked

- **Milk:** Cultured buttermilk and chocolate milk

- **Vegetables:** Those prepared with salt

- **Sauces:** Soy sauce, monosodium glutamate, and steak sauce

- **Other:** Instant foods; pancakes and waffles prepared with salt, baking soda or baking powder; pickles and olives; salted condiments; salted nuts; or peanut butter.

Table 3-6.-Sample Low-Residue Diet

BREAKFAST	
Fruit juice	1/2 cup orange, grapefruit, or apple
Cereal	1 cup cream of wheat or rice
Egg	1 poached
Bread	1 slice white, toasted
Butter or margarine	As desired
Beverages	Milk (1 cup), tea, or coffee
LUNCH	
Soup	1 cup vegetable, strained or pureed
Meat	3 oz broiled lean meat, fish, or fowl
Potato.....	1 medium white
Vegetables	1/2 cup (as allowed)
Bread	1 slice white
Butter or margarine	As desired
Dessert	1 serving plain cake or cookies
Fruit	1 ripe banana
Beverage.....	Coffee or tea
SUPPER	
Soup	1 cup strained tomato
Meat	3 oz broiled lean meat, fish, or fowl
Potato.....	1 medium white
Vegetables	1/2 cup (as allowed)
Bread	1 slice white
Butter or margarine	As desired
Dessert	1/2 cup pureed peaches
Beverages	Milk (1 cup), coffee, or tea

Table 3-7.-Sample Low Sodium Diet (1000 mg)

BREAKFAST	
Fruit	1/2 cup
Cereal	1/2 cup unsalted or low sodium oatmeal
Egg	1 soft cooked
Bread	1 slice low sodium, toasted
Butter or margarine	1 pat unsalted or low sodium
Beverages	1 cup milk or coffee
LUNCH	
Soup	1 serving low sodium cream of tomato
Meat	2 oz low sodium
Potato.....	1/2 cup low sodium
Vegetables	1/2 cup low sodium
Bread	1 slice low sodium
Butter or margarine	1 pat low sodium
Fruit	1 piece, fresh
Salad	1/2 cup
Salad dressing	1 tbsp low sodium
Beverages	Juice or coffee
SUPPER	
Soup	1 cup low sodium beef broth
Meat	2 oz low sodium
Potato.....	1/2 cup low sodium
Vegetables	1/2 cup low sodium
Bread	1 slice low sodium
Butter or margarine	1 pat low sodium
Fruit	1 sliced banana
Salad	1/2 cup
Salad dressing	1 tbsp low sodium
Beverages	1 cup milk or coffee

See table 3-7 for a sample low sodium diet.

Bland Diets

This diet may be helpful for gastritis, hyperacidity, hemorrhoids, peptic ulcers, and other GI disorders. Dietary management of patients with chronic ulcer disease has been the subject of much controversy. Bland diets have traditionally been used for these patients. Experiments show that there is no significant difference in the response of patients with an active duodenal ulcer to a bland diet. The American Dietetic Association states that the only known irritants to the gastric mucosa include alcohol, black pepper, caffeine, chili powder, cocoa, coffee, certain drugs, and tea.

Emphasizing how to eat is as important as indicating what foods to eat, since there are individual responses to bland diets. Offer the following suggestions to the patient:

- Avoid worry and emotional upsets at mealtime
- Chew food well and eat slowly
- Rest before and after meals
- Avoid foods of extreme temperatures

If fruits and juices between meals cause distress, try including them with meals.

The “Six Meal Bland Diet” follows the most conservative approach to the dietary treatment of active ulcer disease. Chemical, mechanical, and thermal irritants are eliminated. Meals are kept small to reduce gastric acidity and distention. Avoid fatty meats, fried foods, whole grain breads and cereals, dried beans and peas, cabbage family vegetables, bouillon, clear broths, chocolate, nuts, seeds, carbonated beverages, caffeine, coffee, decaffeinated coffee, and tea. Patients may use allspice, cinnamon, mace, paprika, sage, thyme, catsup, cranberry or mint jelly, and extract and flavorings without chocolate, salt, and vinegar.

The “Bland Diet” allows a more liberal food selection, reduces the number of meals to three, and increases the quantity of foods given. Avoid whole grain breads and cereal, bouillon, clear broths, chocolate, nuts, seeds, dried fruits, and caffeine. Individualize the diet to the patient.

The “Regular—No Stimulants Diet” eliminates only those items that have been shown

scientifically to irritate the gastric mucosa—alcohol, black pepper, caffeine, chili powder, cocoa, coffee, certain drugs, and tea.

Decaffeinated coffee may be restricted as recent studies show that it causes increased gastric acid secretion and esophageal pressure causing gastric acid reflux in the esophagus. Decaffeinated coffee is only offered on the Bland Diet and the Regular—No Stimulants Diet if it is tolerated by the patient.

Chronic and excessive use of antacids to treat hyperacidity and related conditions may result in thiamin deficiency, presumably because of alkaline destruction of thiamin within the bowel lumen. Excessive intake of milk with antacids may cause systemic alkalosis and hypercalcemia. Milk may be contraindicated in patients with allergic reactions or lactase deficiency.

Sample menu patterns follow for the Six Meal Bland Diet and Bland Diet (tables 3-8 and 3-9). A sample menu pattern is not listed for the Regular-No Stimulants Diet, as it is derived from the regular diet.

Low Carbohydrate, High Protein Diet

A low carbohydrate, high protein diet is used in the treatment of hypoglycemia. This diet limits simple carbohydrates that are quickly absorbed into the blood. A marked rise in blood sugar stimulates the pancreas to overproduce insulin, which leads to a hypoglycemic state as too much sugar is transported out of the blood.

Individualize the diet to the patient, as hypoglycemic reactions may occur at any time for various reasons. For example, meal skipping, inadequate calorie intake with excessive energy expenditure, and drinking alcohol may precipitate a low blood sugar reaction.

The foods may be divided into three to six or more small meals. Liberal amounts of protein and fat are used as they are more slowly digested and absorbed. The diet includes meats, fish, poultry, cheese, eggs, fats, low starch vegetables, and limited amounts of unsweetened fruit and juices, breads, cereals, and high starch vegetables. Because milk contains the sugar lactose, limit it to 2 cups a day for an adult.

Sweets such as candy, sugar, jams, jellies, soft drinks, and pastries should be avoided to help prevent hypoglycemic reactions. They should be consumed only to quickly increase blood sugar levels during a hypoglycemic reaction. If reactions are frequent, it is helpful to carry hard candy for quick and easy use. Handy high protein snacks

Table 3-8.-Six Meal Bland Diet Sample Menu

BREAKFAST	
Juice	1/2 cup
Egg, cooked without fat	1
White toast	1 slice
Butter or margarine	1 pat
Jelly	As desired
Milk	1/2 cup
MORNING SNACK	
Strained fruit	1/2 cup
Plain cookie	1
Eggnog	1/2 cup
LUNCH	
Lean meat	2 oz
Bland potato or substitute	1/4 cup
Bland vegetables	1/4 cup
Butter or margarine	1 pat
Milk	1/2 cup
AFTERNOON SNACK	
White toast	1 slice
Butter or margarine	1 pat
Jelly	1
Pudding	1/2 cup
Milk	1/2 cup
SUPPER	
Lean meat	2 oz
Bland potato or substitute	1/4 cup
Bland vegetable	1/4 cup
Butter or margarine	1 pat
Milk	1/2 cup
BEDTIME SNACK	
Plain cake	1 portion
Milkshake	6 oz

Table 3-9.-Bland Diet Sample Menu

BREAKFAST	
Juice	1/2 cup
Refined cooked cereal	1/2 cup
Eggs or lean meat	2 or 2 oz
White toast	2 slices
Butter or margarine	2 pats
Jelly	As desired
Milk	8 oz
Decaffeinated coffee	(If tolerated)
LUNCH OR SUPPER	
Cream soup	3/4 cup
Saltines	4
Lean meat	3 oz
Bland potato or substitute	1/2 cup
Bland vegetable	1/2 cup
Salad	1 portion
Salad dressing	As desired
White bread or roll	1
Butter or margarine	As desired
Bland dessert or fruit	1 portion
Milk	8 oz
Decaffeinated coffee	(If tolerated)

to help prevent reactions may include cheese, peanut butter, milk, and hardboiled eggs.

A sample low carbohydrate, high protein menu is listed in table 3-10.

REFERENCES:

1. NAVMED P-5125, *Medical Services Diet Manual*
2. Guthrie H: *Introductory Nutrition*, ed 5, St. Louis, C. V. Mosby Co., 1983.
3. Kerschner V: *Nutrition and Diet Therapy*, ed 3, Philadelphia, F. A. Davis Co., 1983.

Table 3-10.-Sample Low Carbohydrate, High Protein Menu

BREAKFAST

Juice	1/2 cup unsweetened
Egg or meat	2 or 2 oz
Bread	1 slice
Butter or margarine	As desired
Milk	1/2 cup

MORNING SNACK

Milk	1/2 cup
Crackers	3
Cheese	2 oz

LUNCH

Meat	4 oz
Vegetable (nonstarch)	1/2 cup
Starch vegetables (potato, corn, rice)	1/4 cup
Butter or margarine	As desired

AFTERNOON SNACK

Milk	1/2 cup
Meat	3 oz
Fresh fruit	1 piece

SUPPER

Meat	4 oz
Vegetable (non starch)	1/2 cup
Unsweetened fruit	1/2 cup or 1 piece
Butter or margarine	As desired

BEDTIME SNACK

Milk	1/2 cup
Cottage cheese	3/4 cup
Graham crackers	1
